28. LOSS ESTIMATION IN CABBAGE DUE TO LEAF WEBBER *CROCIDOLOMIA BINOTALIS* (LEPIDOPTERA: PYRALIDAE)

(*With three text-figures*)

Introduction

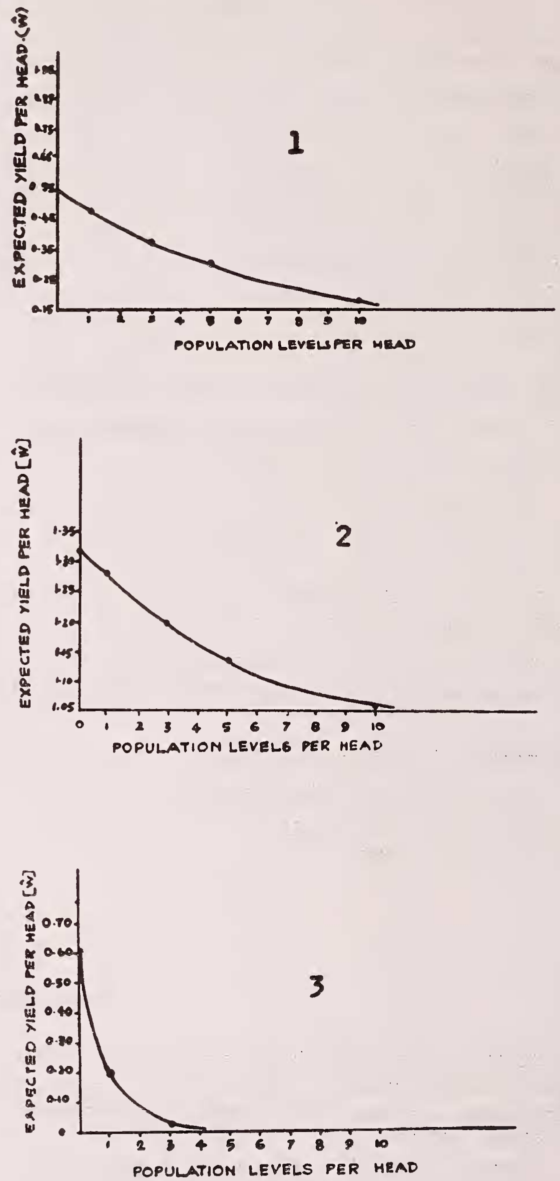
The loss caused by insects is generally a function of insect population density and the losses caused by pests vary in time and space (Strickland and Bardner 1967). Pradhan (1964) emphasised the need for assessment of losses caused by insect pests of crops and estimation of insect populations.

Crocidolomia binotalis Zeller is considered to be a major pest of cabbage in South India. However, there is no record of the actual loss caused to the crop by this pest. Hence, in the present investigation an attempt was made to assess the economic loss caused by *C. binotalis* as a pest of cabbage.

Material and Methods

The studies were carried out at the Indian Institute of Horticultural Research Farm at Hesserghatta, Bangalore.

To assess the economic damage, three crop ages were taken; 15 days old, 30 days old and 45 days old. The variety was Golden Acre. Twelve plants for each replication were covered with iron mesh, wooden cages, 1.8 × 1.2 × 1.8 m in the field. All replications were randomised in 1000 square metres area of cabbage. There were five treatments, viz. artificial infestation of plants with 0, 1, 3, 5, 10 larvae, with three replications of each. Damage occurred for a fortnight, which is the larval period. About 20% of the larvae migrated, but the total number of larvae was maintained by re-infestation with larvae of the same age. The control was kept infestation-free with quinalphos (250 g a.i/ha) spray every week. A relationship between yield and different levels of pest population maintained has been fitted to exponential decay curve as $W = ae^{-bx}$ where



Exponential equation curve of cabbage yield against different population levels.
Fig. 1. 15 days old crop; Fig. 2. 30 days old crop; Fig. 3. 45 days old crop.

W is the expected yield and X is the number of larvae per plant.

Results and Discussion

Mean yields corresponding to different levels of larval population at different stages of the crop growth are shown in table 1. At all the growth stages of the crop, significant reduction in yield was observed over control with increase in the different population levels maintained.

data at different levels of population (fig. 1).

ii) 30-*days old crop*:

Percentage loss in yield (28.09) with unit increase in larval population over control was less in this stage as compared to 15 days old crop and injurious at three larvae per plant. None of the maintained levels of population could cause complete loss of yield. The exponential growth curve $W = 0.32\, e^{-0.1616x}$ showed good fit to yield-pest density relationship (fig. 2).

Table 1

Cabbage yield after artificial infestation during three growth stages

No. of larve maintained	Mean yield per plant (kg) 15 days		30 days		45 days	
0	0.7882	—	0.4576	—	0.4578	—
1	0.3867	(50.88)	0.3292	(28.09)	0.2875	(37.19)
3	0.3343	(57.53)	0.1360	(70.39)	0.1670	(96.35)
5	0.2713	(69.54)	0.1000	(76.69)	—	—
10	0.2219	(71.80)	0.0881	(80.78)	—	—
S.E.M.	0.083		0.077		—	—
CD (5%)	0.1914		0.1776		—	

Figures in parentheses show % loss over control.

*Statistical analysis for the third set (viz. 45 days) could not be carried out since most values were zero at higher level of infestation.

The data was adequately fitted to exponential curves for all the three crop stages and is useful in explaining the rate of decrease of yield with unit increase of larval population.

i) 15-*days old crop*:

It has been observed that with unit increase of larval population, there is a significant reduction in yield over control. This revealed that even a single larvae per plant could cause sufficient economic loss to the crop. With further increase in population, decrease in yield was slow because of increased availability of food. The exponential growth curve $W = 0.5333\, e^{-0.1028x}$ adequately explained the

iii) 45-*days old crop*:

37.19% loss in yield with unit increase in larval population over control has been observed in this age of the crop which is higher than 30-days old crop. With further increase of population, total loss in yield was recorded. The data showed the best fit to exponential curve $W = 0.6119\, e^{-1.1493x}$ (fig. 3).

The comparison of yield loss at all the three growth stages of crop revealed that a single leaf webber larva is sufficient to cause economic damage to cabbage crop. It was also observed that the yield loss was faster at 15 days growth of crop. This indicated that if the crop is attacked by the leaf webber at the early stages of crop growth, then proper control measures should be adopted to avoid economic damage to the crop.

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29. THE FOOD OF *BENGALIA LATERALIS* MACQUART, 1842 (DIPTERA: CALLIPHORIDAE) IN SRI LANKA

On 21 November, 1986 a rather robust brown fly was observed flying inside my house in Kotte, a suburb of Colombo, around 18.30 hrs. A few winged termites (*Odontotermes* sp.) had also been attracted indoors by the lights and were fluttering about. Suddenly, I noticed that the fly had captured one of these termites (the exact moment of capture was not seen) and was flying with the termite held in its legs. It soon settled on a metal curtain rail and, holding its prey down on its back with its fore legs, proceeded to feed on the soft underside of the termite's abdomen. The fly fed on the termite for some 5-10 minutes, and throughout this period the termite moved its legs ineffectually in an attempt to free itself. It could not move its wings which were held down by the fly's hind legs. After feeding on the termite the fly let it drop to the ground and settled, after flying around, elsewhere, from where it was captured for identification.

On examination, the fly proved to be a species of *Bengalia* and was identified with the aid of Senior White *et al.* (1940) as *Bengalia lateralis* Macquart, 1842 from the structure of the cleared genitalia; the superior claspers agreed well with Fig. 43 (lower) of Senior White *et al.* (loc. cit.). Previous to this, two female *Bengalia* specimens were collected, also from indoors, which appear to belong to this species, and from other observations it would appear that this is a common species. A correspondent of the writer, T. A. Wijesiri of Opatha, Kotugoda (Gampaha District), has observed a *Bengalia* fly, presumably the same species, which is commonly attracted to opened-up nests of the ant *Oecophylla smaragdina* (Fabricius) to feed on the ant pupae.